

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Type Test ☒ Initial ☐ Annual ☐ Special						Test Date 04-05-91			
Company Conoco, Inc.				Connection Phillips 66 Natural Gas Co.					
Pool Eumont				Formation <u>Eumont Y-5R</u> <u>Monument Queen</u>				Unit 660' FSL & 1980' FEL	
Completion Date 02-20-91		Total Depth 3850		Plug Back TD 3775		Elevation 3572 GL		Farm or Lease Name St. A-3 Gas Comp	
Csq. Size 5 1/2	Wt. 17	d 4.892	Set At 3850	Perforations: From 3621 To 3750		Well No. 2			
Thq. Size 2 7/8	Wt. 6.5	d 2.441	Set At 3554	Perforations: From OPEN To END		Unit 0		Sec. 3 Twp. 20-S Rge. 37-E	
Type Well - Single - Bradenhead - G.C. or G.O. Multiple <u>Single</u>						Packer Set At 3554		County Lea	
Producing Thru Tubing		Reservoir Temp. °F 110.9# 3554		Mean Annual Temp. °F 60		Baro. Press. - P _a 13.2		State New Mexico	
L 3554	H 3554	C _g .725	% CO ₂ 3.30	% N ₂ 1.57	% H ₂ S .19	Prover	Meter Run 4.026	Taps Flange	

FLOW DATA							TUBING DATA		CASING DATA		Duration of Flow
NO.	Prover Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. h _w	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	Temp. °F	
SI							178		PKR		72 hrs.
1.	4	X	1.750	24.4	6.90	65	168		PKR		45 mins.
2.	4	X	1.750	26.5	12.70	65	159		PKR		45 mins.
3.	4	X	1.750	28.0	18.40	65	150		PKR		45 mins.
4.	4	X	1.750	28.7	23.20	65	136		PKR		1 hr.
5.											

RATE OF FLOW CALCULATIONS							
NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor F _t	Gravity Factor F _g	Super Compress. Factor, F _{sp}	Rate of Flow Q, Mcd
1.	14.93	16.11	37.6	.9952	1.174	1.003	282
2.	14.93	22.45	39.7	.9952	1.174	1.003	393
3.	14.93	27.53	41.2	.9952	1.174	1.003	482
4.	14.93	31.18	41.9	.9952	1.174	1.003	546
5.							

NO.	P _r	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio <u>DRY GAS</u> Mcd/bbl.
1.	.05	525	1.34	.995	A.P.I. Gravity of Liquid Hydrocarbons <u>DRY</u> Deg.
2.	.05	525	1.34	.995	Specific Gravity Separator Gas <u>.725</u> X X X X X X X X
3.	.06	525	1.34	.995	Specific Gravity Flowing Fluid X X X X X
4.	.06	525	1.34	.995	Critical Pressure *679 P.S.I.A. P.S.I.A.
5.					Critical Temperature *390 R R

NO.	P ₁ ²	P _w	P ₂ ²	P ₂ ² - P _w ²
1	181.5	32.9	4.1	
2	174.3	30.4	6.6	
3	167.0	27.9	9.1	
4	157.0	24.7	12.3	
5				

(1) $\frac{P_c^2}{P_c^2 - P_w^2} = 3.008$

AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 1.071$

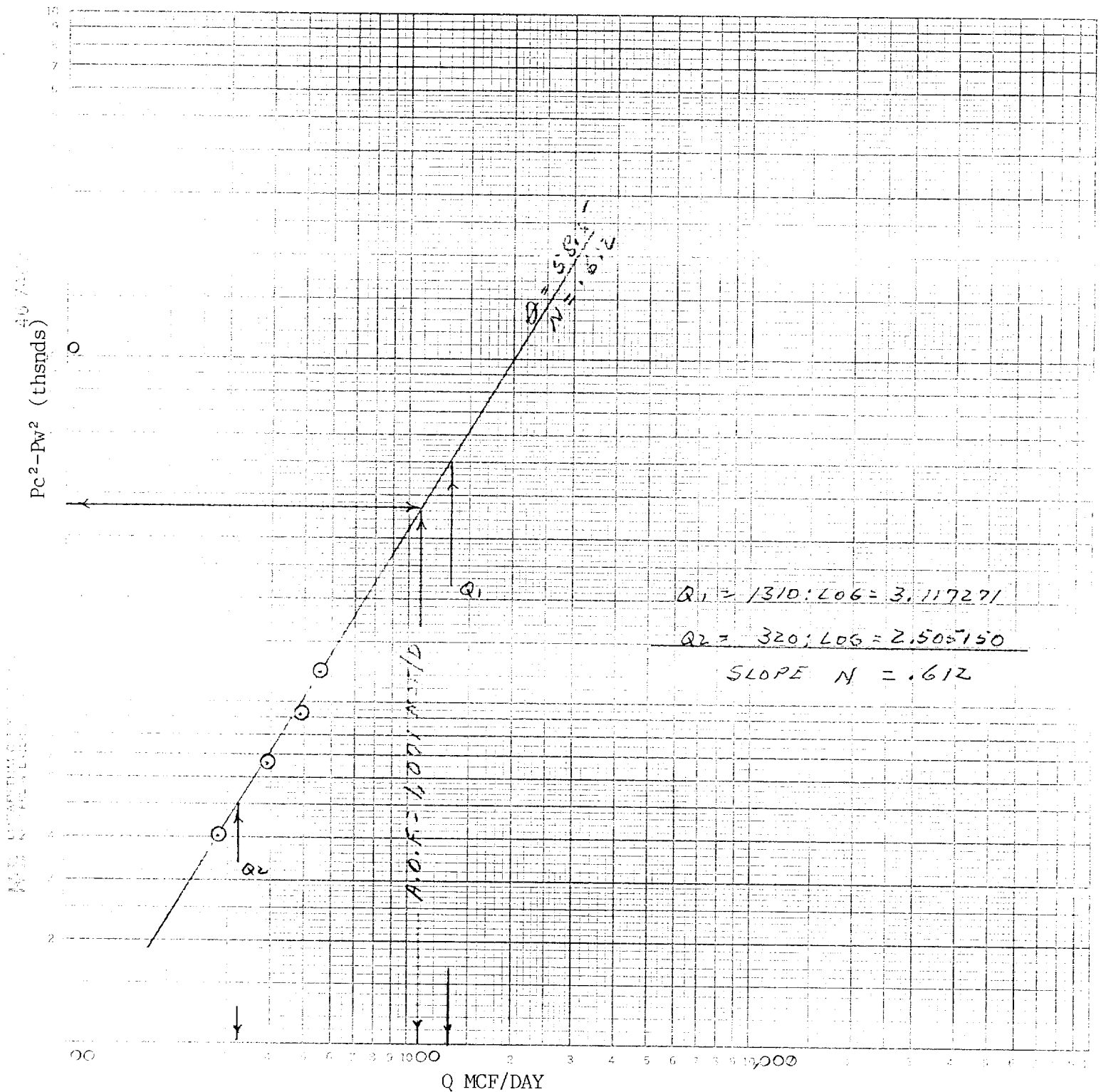
(2) $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 1.962$

Absolute Open Flow <u>1,071</u> Mcd @ 15.025	Angle of Slope θ <u>58.5</u>	Slope, n <u>.612</u>
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Remarks: * corrected to 3.30% CO₂ & 1.57% N₂
NO FLUID PRODUCED DURING TEST
BHP instrument set @ 3486' DF.

Approved By Division	Conducted By: ProWell Testers	Calculated By: BM	Checked By: BM
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Conoco, Inc.
 St. A-3 Gas Comm., Well #2
 O - 3 - 20S - 37E
 Lea County, New Mexico
 04-05-91



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APR 22 1991

GOV
HOBBS OFFICE

WORK SHEET FOR CALCULATION OF WELLHEAD PRESSURE (P_c or ~~P_w~~)
FROM KNOWN BOTTOM HOLE PRESSURE (P_f or P_s)

FORM C-122F

COMPANY CONOCO INC LEASE : ST A 3 WELL NO. : GAS COM 2 DATE 4 5 91
UNIT 0 SECTION : 3 TWSHP : 20 RANGE : 37
L 3554 H : 3554 L/H : 1 G/GMIX : 0.7250
CO2 : 3.3 N2 : 1.57 H2S : 0.19
GH : 2576.7 PCR : 679 TCR : 390

LINE		1	2	3	4	5	6	7	8
1	TW(W.H. R)	534	534	534	534	534	534	534	534
2	Ts(B.H. R)	569.5	569.5	569.5	569.5	569.5	569.5	569.5	569.5
3	T=(Tw+Ts/2)	551.8	551.8	551.8	551.8	551.8	551.8	551.8	551.8
4	Z (EST.)	1.008	0.940	ERR	ERR	ERR	ERR	ERR	ERR
5	TZ	556	519	ERR	ERR	ERR	ERR	ERR	ERR
6	GH/TZ	4.634	4.965	ERR	ERR	ERR	ERR	ERR	ERR
7	eS(TABLE XIV)	1.190	1.205	ERR	ERR	ERR	ERR	ERR	ERR
8	P_f or P_s	211.2	211.2	0	0	0	0	0	0
9	P_f2 or P_s2	44.6	44.6	0.0	0.0	0.0	0.0	0.0	0.0
10	$P_c2=P_f/eS$ or $P_w2=P_s2/eS$	37.5	37.0	ERR	ERR	ERR	ERR	ERR	ERR
11	P_c or P_w	194	192	ERR	ERR	ERR	ERR	ERR	ERR
12	$P=(P_w+P_s/2)$ or $(P_c+P_f/2)$	202	202	ERR	ERR	ERR	ERR	ERR	ERR
13	$P_r=(P/P_{cr})$	0.30	0.30	ERR	ERR	ERR	ERR	ERR	ERR
14	$T_r(T/T_{cr})$	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41
15	Z (TABLE XI)	0.940	0.941	ERR	ERR	ERR	ERR	ERR	ERR

P_c 1 : 192.4 PW 2 : ERR PW 3 : ERR PW 4 : ERR

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COLE
HOZAK C-1013

WORK SHEET FOR CALCULATION OF WELLHEAD PRESSURE (P_{wh} or P_w)
FROM KNOWN BOTTOM HOLE PRESSURE (P_f or P_s)

FORM C-122F

COMPANY CONOCO INC LEASE : ST A 3 WELL NO. : GAS COM 2 DATE 4 5 91
UNIT 0 SECTION : 3 TOWNSHIP : 20 RANGE : 37
L 3554 H : 3554 L/H : 1 G/GMIX : 0.7250
CO2 : 3.3 N2 : 1.57 H2S : 0.19
GH : 2576.7 PCR : 679 TCR : 390

LINE		1	2	3	4	5	6	7	8
1	TW(W.H. R)	534	534	534	534	534	534	534	534
2	Ts(B.H. R)	569.5	569.5	569.5	569.5	569.5	569.5	569.5	569.5
3	T=(Tw+Ts/2)	551.8	551.8	551.8	551.8	551.8	551.8	551.8	551.8
4	Z (EST.)	1.010	0.942	0.942	0.944	0.944	0.945	0.946	0.947
5	TZ	557	520	520	521	521	522	522	523
6	GH/TZ	4.624	4.955	4.955	4.947	4.948	4.941	4.938	4.931
7	eS(TABLE XIV)	1.189	1.204	1.204	1.204	1.204	1.204	1.203	1.203
8	Pf or Ps	199.2	199.2	191.2	191.2	183.2	183.2	172.2	172.2
9	Pf2 or Ps2	39.7	39.7	36.6	36.6	33.6	33.6	29.7	29.7
10	Pc2=Pf/eS or Pw2=Ps2/eS	33.4	33.0	30.4	30.4	27.9	27.9	24.6	24.6
11	Pc or Pw	183	182	174	174	167	167	157	157
12	P=(Pw+Ps/2)or(Pc+Pf/2)	191	190	183	183	175	175	165	165
13	Pr=(P/PCR)	0.28	0.28	0.27	0.27	0.26	0.26	0.24	0.24
14	Tr(T/TCR)	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41
15	Z (TABLE XI)	0.942	0.943	0.944	0.944	0.945	0.945	0.947	0.947

PW 1 : 181.5 PW 2 : 174.3 PW 3 : 167.0 PW 4 : 157.0